

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)  
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ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
JLL	3,226,846	01/04/1966	Wood			
JLL	3,304,434	02/14/1967	Koster			
JLL	3,541,541	11/17/1970	Engelbart			
JLL	3,748,366	07/24/1973	Rader et al.			
JLL	3,775,865	12/04/1973	Rowan			
	Des. 233,238	10/15/1974	Reid et al.			
JLL	4,321,047	03/23/1982	Landis			
JLL	4,360,345	11/23/1982	Hon			
JLL	4,409,479	10/11/1983	Sprague et al.			
JLL	4,459,113	07/10/1984	Boscaro Gatti et al.			
JLL	4,490,810	12/25/1984	Hon			

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## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
SU 1124-372-A	11/15/1984	Soviet Union			
EP 169-776-A	01/29/1986	Europe			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

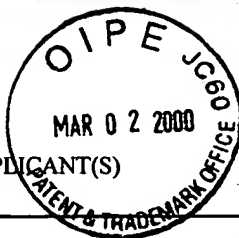
JLL	GINSBURG, <i>This Shot Won't Hurt At All</i> , Washington Business, July 6, 1998.
JLL	MERRIL, <i>Virtual and Augmented Reality in Medicine</i> , Proceedings of the IEEE, Vol. 86, No. 3, March 1998, pp. 471-473.
JLL	HAHN et al., <i>Training Environment for Inferior Vena Caval Filter Placement</i> , Medicine Meets Virtual Reality, January 1998, pp. 291-296.
JLL	Immersion Human Interface Corporation, <i>Programmer's Technical Reference Manual: Immersion Probe and Personal Digitizer</i> , May 1994, pp. 1-80.
JLL	KEGIER, <i>Surgeons Turn to Surgical Simulation Via Virtual Reality to Practice New Procedures</i> , Laproscopy News, November 1994, pp. 6-8.
JLL	MERRIL et al., <i>Cyber Surgery: Cutting Costs, Sewing Benefits</i> , Virtual Reality Special Report, Summer, 1994, pp. 39-42.

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JLS	4,642,055	02/10/1987	Saliterman			
JLS	4,712,101	12/08/1987	Culver			
JLS	4,726,772	02/23/1988	Amplatz			
JLS	Des. 392,878	03/31/1988	Nordstrom et al.			
JLS	4,773,865	08/27/1988	Baldwin			
JLS	4,767,333	08/30/1988	Born			
JLS	4,789,340	12/06/1988	Zikria			
JLS	4,804,328	02/14/1989	Barrabee			
JLS	4,807,158	02/21/1989	Blanton et al.			
JLS	4,867,168	09/19/1989	Stoor et al.			
JLS	4,867,685	09/19/1989	Brush et al.			

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## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
FR 2 592 514	07/03/1987	France			
SU 1335-994-A	11/30/1987	Soviet Union			

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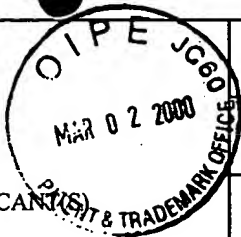
JLS		HON, <i>Realistic Medical Simulations</i> , Virtual Reality World, July/August, 1994, pp. 59-62.
JLS		SATAVA, <i>The Role of Virtual Reality in Medicine of the 21<sup>st</sup> Century</i> , Virtual Reality Systems, Vol. 1, No. 2, Fall 1993, pp. 64-67.
JLS		MERRIL et al., <i>Virtual Heart Surgery: Trade Show and Medical Education</i> , Virtual Reality World, July/August 1994, pp. 55-57.
JLS		MERRIL et al., <i>Virtual Reality for Tradeshows and Individual Physician Training</i> , Virtual Reality Systems, Spring 1994, pp. 40-44.
JLS		ROSENBERG, <i>Medical Applications of Virtual Reality</i> , Virtual Reality Systems, Vol. 1, No. 3, Spring 1994, pp. 48-50.

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LZL	4,879,668	11/07/1989	Cline et al.			
LZL	4,907,973	03/13/1990	Hon			
LZL	4,936,862	06/26/1990	Walker et al.			
LZL	5,044,956	09/03/1991	Behensky et al.			
LZL	5,077,608	12/31/1991	Dubner			
LZL	5,086,401	02/04/1992	Glassman et al.			
LZL	5,099,846	03/31/1992	Hardy			
LZL	5,112,228	05/12/1992	Zouras			
LZL	5,130,794	07/14/1992	Ritchey			
LZL	5,137,458	08/11/1992	Ungs et al.			
LZL	5,149,270	09/22/1992	McKeown			

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## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
DE 3834-553-A	04/12/1990	Germany			
SU 1732371-A1	05/07/1992	Soviet Union			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

LZL	MERRIL et al., <i>Surgical Simulation Using Virtual Reality Technology: Design, Implementation, and Implications</i> , Surgical Technology International III, Fall 1994, pp. 53-60.
LZL	TAUBES, <i>Surgery in Cyberspace</i> , Discover, December, 1994, pp. 85-94.
LZL	KRUEGER et al., <i>The Responsive Workbench</i> , IEEE Computer Graphics and Applications, May, 1994, pp. 12-15.
LZL	JACKSON et al., <i>Force Feedback and Medical Simulation</i> , Interactive Technology and the New Paradigm for Healthcare, January 1995, pp. 147-151.
LZL	COVER et al., <i>Interactively Deformable Models for Surgery Simulation</i> , IEEE Computer Graphics & Applications, Vol. 13, No. 6, November 1993, pp. 68-75.
LZL	OKIE, <i>Out of Body Medicine</i> , Washington Post, November 5, 1996, pp. 12-14, 17.

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Sheet 4 of 12

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## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
<i>LSL</i>	5,185,561	02/09/1993	Good et al.			
<i>LSL</i>	5,205,289	04/27/1993	Hardy et al.			
<i>LSL</i>	5,220,260	06/15/1993	Schuler			
<i>LSL</i>	5,222,499	06/29/1993	Allen et al.			
<i>LSL</i>	5,261,404	11/16/1993	Mick et al.			
<i>LSL</i>	5,273,038	12/28/1993	Beavin			
<i>LSL</i>	5,295,694	03/22/1994	Levin			
<i>LSL</i>	5,311,422	05/10/1994	Loflin et al.			
<i>LSL</i>	5,320,326	06/14/1994	Ju et al.			
<i>LSL</i>	5,320,537	06/14/1994	Watson et al.			
<i>LSL</i>	5,320,538	06/14/1994	Baum			

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<i>LSL</i> EP 0 485 766	05/20/1992	Europe			

## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

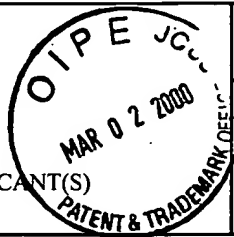
<i>LSL</i>		SMITH, <i>Scanning the Technology</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 474-478.
		DAWSON et al., <i>The Imperative for Medical Simulation</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 479-483.
<i>LSL</i>		SATAVA et al., <i>Current and Future Applications of Virtual Reality for Medicine</i> , Proceedings of IEEE, Vol. 86, No. 3, March 1998, pp. 484-489.
		BRO-NIELSEN, <i>Finite Element Modeling in Surgery Simulation</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 490-503.
<i>LSL</i>		ACKERMAN, <i>The Visible Human Project</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 504-511.
		DELINGETTE, <i>Toward Realistic Soft Tissue Modeling in Medical Simulation</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 512-523.

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JLS	5,322,441	06/21/1994	Lewis et al.			
JLS	5,333,106	07/26/1994	Lanpher et al.			
JLS	5,338,198	08/16/1994	Wu et al.			
JLS	Des. 272,833	02/28/1994	Van Assche et al.			
JLS	5,343,871	09/06/1994	Bittman et al.			
JLS	5,354,202	10/11/1994	Moncrief et al.			
JLS	5,376,007	12/27/1994	Zirm			
JLS	5,377,116	12/27/1994	Wayne et al.			
JLS	5,385,474	01/31/1995	Brindle			
JLS	5,389,865	02/14/1995	Jacobus et al.			
JLS	5,391,081	02/21/1995	Lampotang et al.			

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DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
WO 95/02233	01/19/1995	WIPO			

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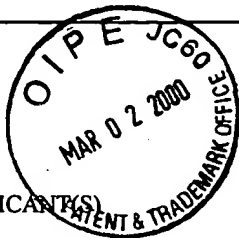
JLS	CHAN et al., <i>Force Feedback for Surgical Simulation</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 524-530.
JLS	SOFERMAN et al., <i>Advanced Graphics Behind Medical Virtual Reality: Evolution of Algorithms, Hardware, and Software Interfaces</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 531-554.
JLS	SHAHIDI et al., <i>Clinical Applications of Three Dimensional Rendering of Medical Data Sets</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 555-568.
JLS	HILL et al., <i>Telepresence Technology in Medicine: Principles and Applications</i> , Proceedings of IEEE, Vol 86, No. 3, March 1998, pp. 569-580.

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LdB	5,403,191	04/04/1995	Tuason			
LdB	5,414,337	05/09/1995	Schuler			
LdB	5,438,529	08/01/1995	Rosenberg et al.			
LdB	5,451,924	09/19/1995	Massimino et al.			
LdB	5,454,722	10/03/1995	Holland et al.			
LdB	5,459,382	10/17/1995	Jacobus et al.			
LdB	5,482,472	01/09/1996	Garoni et al.			
LdB	5,483,254	01/09/1996	Powell			
LdB	5,483,961	01/16/1996	Kelly et al.			
LdB	5,509,810	04/23/1996	Schertz et al.			
LdB	5,510,832	04/23/1996	Garcia			

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WO 96/16397	05/30/1996	WIPO			
WO 96/28800	09/19/1996	WIPO			

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JLH	5,513,992	05/07/1996	Refait			
JLH	5,518,406	05/21/1996	Waters			
JLH	5,531,227	07/02/1996	Schneider			
JLH	5,546,943	08/20/1996	Gould			
JLH	5,552,995	09/03/1996	Sebastian			
JLH	5,559,412	09/24/1996	Schuler			
JLH	5,576,727	11/19/1996	Rosenberg et al.			
JLH	5,589,854	12/31/1996	Tsai			
JLH	5,593,306	01/14/1997	Kohnke			
JLH	5,609,485	03/11/1997	Bergman et al.			
JLH	5,623,582	04/22/1997	Rosenberg			

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DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
EP 0 800 804	10/15/1997	Europe			
WO 98/10387	03/12/1998	WIPO			

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JLB	5,629,594	05/13/1997	Jacobus et al.			
JLB	5,666,138	09/09/1997	Culver			
JLB	5,682,886	11/04/1997	Delp et al.			
JLB	5,687,259	11/11/1997	Linford			
JLB	5,691,898	11/25/1997	Rosenberg et al.			
JLB	5,701,140	12/23/1997	Rosenberg et al.			
JLB	5,704,791	01/06/1998	Gillio			
JLB	5,721,566	02/24/1998	Rosenberg et al.			
JLB	5,722,836	03/03/1998	Younker			
JLB	5,724,264	03/03/1998	Rosenberg et al.			
JLB	5,731,804	03/24/1998	Rosenberg			

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WO 98/58308	12/23/1998	WIPO			
EP 0 908 836	04/14/1999	Europe			

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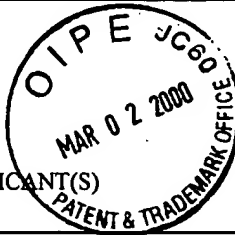

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LH	5,734,373	03/31/1998	Rosenberg et al.			
LH	5,739,811	04/14/1998	Rosenberg et al.			
LH	5,740,802	04/21/1998	Nafis et al.			
LH	5,742,278	04/21/1998	Chen et al.			
LH	5,755,577	05/26/1998	Gillio			
LH	5,766,016	06/16/1998	Sinclair et al.			
LH	5,767,839	06/16/1998	Rosenberg			
LH	5,768,134	06/16/1998	Swaelens et al.			
LH	5,769,640	06/23/1998	Jacobus et al.			
LH	5,791,908	08/11/1998	Gillio			
LH	5,800,177	09/01/1998	Gillio			

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WO 99/38141	07/29/1999	WIPO			

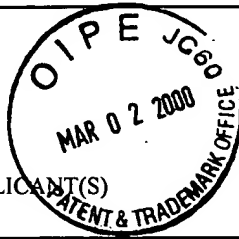
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LZL		5,800,178	09/01/1998	Gillio			
LZL		5,800,179	09/01/1998	Bailey			
LZL		5,805,140	09/08/1998	Rosenberg et al.			
LZL		5,807,115	09/15/1998	Hu			
LZL		5,821,920	10/13/1998	Rosenberg et al.			
LZL		5,825,308	10/20/1998	Rosenberg			
LZL		5,825,941	10/20/1998	Linford et al.			
LZL		5,828,197	10/27/1998	Martin et al.			
LZL		5,853,292	12/29/1998	Eggert et al.			
LZL		5,873,731	02/23/1999	Prendergast			
LZL		5,873,732	02/23/1999	Hasson			

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LZL		WO 93/08517	04/29/1993	WIPO			
LZL		WO 95/02801	01/26/1995	WIPO			

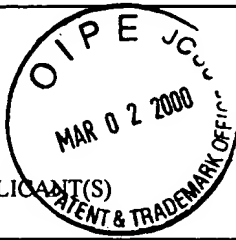
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<i>JLA</i>	5,880,976	03/09/1999	DiGioia, III et al.			
<i>JLA</i>	5,882,206	03/16/1999	Gillio			
<i>JLA</i>	5,882,207	03/16/1999	Lampotang et al.			
<i>JLA</i>	5,890,908	04/06/1999	Lampotang et al.			
<i>JLA</i>	5,891,131	04/06/1999	Rajan et al.			
<i>JLA</i>	5,909,380	06/01/1999	Dubois et al.			
<i>JLA</i>	5,941,710	08/24/1999	Lampotang et al.			
<i>JLA</i>	5,945,056	08/31/1999	Day et al.			
<i>JLA</i>	5,947,743	09/07/1999	Hasson			
<i>JLA</i>	5,951,301	09/14/1999	Yunker			
<i>JLA</i>	5,956,040	09/21/1999	Asano et al.			

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## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT

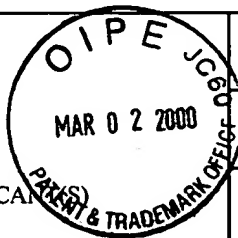
## OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)


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ATTY DOCKET NO. C0136.HTM

SERIAL NO. 09/237,969

APPLICANT Alexander et al.

FILING DATE January 27, 1999

GROUP

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*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
<i>LS</i>		5,967,790	10/19/1999	Strover et al.			
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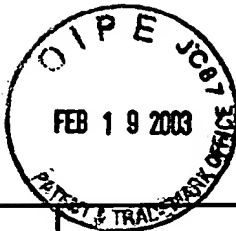
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Substitute for form 1449A/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)				<i>Complete if Known</i>	
				Application Number	09/237,969
				Filing Date	January 27, 1999
				First Named Inventor	David ALEXANDER
				Group Art Unit	3714
				Examiner Name	J. Sotomayor
				Attorney Docket Number	IMMR023/01US (NEW)
Sheet	1	of	1		

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code <sup>2</sup> (if known)		

FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T <sup>6</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
<i>JSA</i>	1	GB	2288686	A	University of Bristol	10-25-1995	
<i>JSA</i>	2	GB	2252656	A	KeyMed	08-12-1992	
<i>JSA</i>	3	EP	0970714	A2	Mitsubishi	01-12-2000	
<i>JSA</i>	4	WO	98/03954	A1	Colorado Medical Simulators, Inc.	01-29-1998	

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>6</sup>

Examiner Signature	<i>John L. Sotomayor</i>	Date Considered	<i>4/23/03</i>
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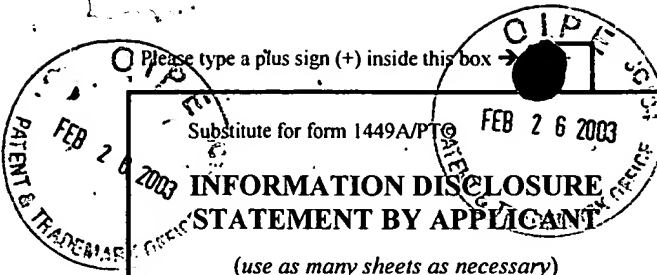
<sup>2</sup> See attached Kinds of U.S. Patent Documents.

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<sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

<sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.



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Application Number	09/237,969
Filing Date	January 27, 1999
First Named Inventor	David ALEXANDRE et al.
Group Art Unit	3714
Examiner Name	J. Sotomayor
Attorney Docket Number	IMMR-023/01US

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Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code <sup>2</sup> (if known)		
JLL	A1	5,785,630		Bobick, et al.	07/28/1998
	A2	5,766,016		Sinclair et al.	06/16/1998
	A3	5,547,382		Yamasaki et al.	08/20/1996
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		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
JLL	B1		0 349 086	A1	Stork Kwant B.V.	01/03/1990	

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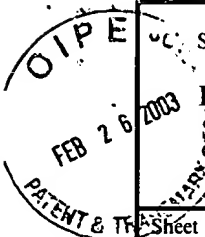
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**Complete if Known**

Sheet	2	of	3	Application Number	09/237,969
				Filing Date	January 27, 1999
				First Named Inventor	David ALEXANDRE et al.
				Group Art Unit	3714
				Examiner Name	J. Sotomayor
				Attorney Docket Number	IMMR-023/01US

## **OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
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	C2	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993	
	C3	Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," <i>MIT Libraries Archives</i> pp. 1-131, May 1990, archived 8/14/90	
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	C5	Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); <i>Experimental Brain Research</i> , Vol. 79, No. 1, pp. 150-156, 1990	
	C6	Burdea et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," <i>1993 IEEE International Conference on Robotics and Automation</i> , pp. 25-44, 05/02/1993	
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	C9	Tadros, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," <i>MIT Archive</i> , pp. 1-88, February 1990, archived 8/13/90	
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	C17	Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90	
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Substitute for form 1449A/PTO		Complete if Known			
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		Application Number	09/237,969		
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		First Named Inventor	David ALEXANDRE et al.		
		Group Art Unit	3714		
		Examiner Name	J. Sotomayor		
Sheet	3	of	3	Attorney Docket Number	IMMR-023/01US

<i>JS</i>	C29	Bejczy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980	
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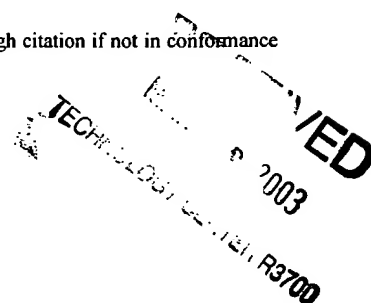
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*John L. Sotomayor*

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